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*losum*. But in other respects the gametophyte and embryo of *B. virginianum* agrees with what is known of other Ophioglossaceæ. The author points out a similarity in form between the prothalli of *B. virginianum* and *Hypopodium annotinum*, while a likeness is also found in the same organs of *Ophioglossum pedunculosum* and *L. cernuum* and *L. inundatum*, showing two types of the gametophyte in the Ophioglossaceæ as in the Lycopodiaceæ.

H. M. R.

**Proteolytic Enzyme of Nepenthes.**<sup>1</sup>—This paper is in continuation of one published by the same author in 1897. He concludes that the enzyme from the pitchers of *Nepenthes* is comparatively a very stable one. High temperatures and alkalis gradually lessen its activity, but do not completely destroy its power of digestion unless strong means are employed. The enzyme is of the nature of a tryptic ferment closely resembling that found in germinating seeds, like which it is active only in an acid medium. The author considers that he has fairly demonstrated the enzyme to arise from a zymogen in the gland cell of the pitcher.

H. M. R.

**Nucleus of the Yeast Plant.**<sup>2</sup>—According to this last account the cells of yeast certainly possess what the author terms a nuclear apparatus. This consists in the early stages of fermentation of what is called a homogeneous nucleolus in close contact with a vacuole containing a chromatin network. In later stages the "chromatin-vacuole" may have disappeared, the chromatin material being found as fine granules in the protoplasm. In the young stages there may be more than one "chromatin-vacuole," which later appear to fuse. The division which accompanies budding is direct, and takes place in the constriction between mother and daughter cell. If the author is properly understood, in spore formation the chromatin is absorbed by the nucleolus, to appear later in the form of fine grains (chromosomes?). The nucleolus elongates into a dumb-bell shape in the division preceding spore formation, and then constricts into two. Subsequent divisions forming four or even more new nucleoli may take place. A wall forms around these, and the spores are formed. The author does not demonstrate very definitely the relation of the nuclear apparatus of the spore to that of the vegetative cell. It

<sup>1</sup> Vines, S. H. The Proteolytic Enzyme of *Nepenthes* (II), *Ann. Bot.*, vol. xii (December, 1898), pp. 545-555.

<sup>2</sup> Wager, Harold. The Nucleus of the Yeast Plant, *Ann. Bot.*, vol. xii (December, 1898), pp. 499-537, Pls. XXIX, XXX.

would be interesting to know the changes which take place in the subsequent growth of the spore. A full historical account precedes the paper. Corrosive sublimate and Gram's iodine solution are recommended for killing, while a variety of aniline dyes were chiefly used for staining. Sections were also made. The species studied are given as *Saccharomyces cerevisiæ*, *S. ludwigii*, *S. pastorianus*, *S. mycodenua*, and a red yeast.

H. M. R.

**Botanical Notes.**—Skeletonizing leaves, always an interesting occupation, and one of some scientific utility, is described in the number of *Science* for December 30 by A. F. Woods, who finds minute crustacea belonging to the genus *Cypridopsis* to be the active agent. So long as any parenchyma is present, they appear not to attack even the finer vascular bundles.

Under the heading "Foreign Weeds and their Extermination," Professor Pammel contributes an interesting little article to *The Gentleman Farmer Magazine* for November.

The forage plants and forage resources of the Gulf States are reported on by Professor Tracy in *Bulletin No. 15* of the Division of Agrostology of the United States Department of Agriculture.

Forestry in relation to physical geography and engineering is the subject of an article by John Gifford in the *Journal of the Franklin Institute* of July last.

"Check-List of the Forest Trees of the United States, their Names and Ranges," is the title of *Bulletin No. 17* of the Division of Forestry of the United States Department of Agriculture, by George B. Sudworth. It is stated to be in the main a condensed reproduction of *Bulletin No. 14* of the same division, like which it exemplifies the "Neo-American" views in nomenclature, and it is intended to be helpful in bringing about a more uniform and stable use of names by lumbermen, nurserymen, and others interested in forest trees.

The determination of woods by characters drawn from their structure, to which some attention has been given by engineers of late, forms the subject of an article by Charles Bommer, illustrated by twelve enlarged phototypes, showing the cross-section of as many woods, in the *Bulletin of the Société centrale Forestière* of Belgium for December.

Prof. T. H. McBride has published in separate form an instructive address on public parks for Iowa towns, which may well be read by the inhabitants of towns outside that state.